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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/706,935	11/14/2003	Hans-Joachim Dammann	245485US41X CONT	7430
22850	7590	01/05/2005	EXAMINER	
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			PRUCHNIC, STANLEY J	
			ART UNIT	PAPER NUMBER
			2859	

DATE MAILED: 01/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/706,935	Applicant(s) DAMMANN, HANS-JOACHIM	
	Examiner Stanley J. Pruchnic, Jr.	Art Unit 2859	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 September 2004 and 08 June 2004.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5, 7-16 and 18-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 5, 8-13, 16 and 19-25 is/are rejected.
- 7) ☒ Claim(s) 3, 4, 7, 14, 15, 18 and 26-28 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☒ Certified copies of the priority documents have been received in Application No. 10/096,158.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>6/8/04; 9/27/04 (2 sheets)</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Priority

1. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in parent Application No. 10/096,158, filed on 11 March 2002.

Terminal Disclaimer

2. The terminal disclaimer filed on 27 September 2004 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of any patent granted issuing from Application No. 10/706,937 has been reviewed and is accepted. The terminal disclaimer has been recorded.

Amendment Status

3. The Amendment (Not Entered) to the Specification filed on 09/27/04 (Page 2 of Reply) does not comply with the requirements of 37 CFR 1.121(b)(1), which states

Amendments to the specification, including amendment to a section heading or the title of the invention which are considered for amendment purposes to be an amendment of a paragraph, must be made by submitting:

- (i) An instruction, which unambiguously identifies the location, to delete one or more paragraphs of the specification, replace a paragraph with one or more replacement paragraphs, or add one or more paragraphs;
- (ii) The full text of any replacement paragraph with markings to show all the changes relative to the previous version of the paragraph...

In this case, the entire paragraph has not been identified, since the paragraph begins on the previous page. The full text of the entire paragraph has not been included in the proposed amendment.

In order to expedite prosecution, this "informal" amendment has been considered "Not Entered". Please resubmit the amendment (only the changes directed toward the Specification, that is, all that was included on Page 2 of the Reply filed 09/27/04, including the amendment to the Title and Paragraph 1) with your response to this Office Action.

Specification

4. Please resubmit the amended Paragraph(s), *etc.*, as noted above, to include the entire paragraph starting on Page 11. Appropriate Correction is required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. ***Claims 1-2, 5, 8-13, 16, 19-22 and 25*** are FINALLY rejected under 35 U.S.C. 102(b) as being anticipated by IIDA *et al.* (U. S. Patent No. 5,356,220, hereinafter ***IIDA'220***).

Regarding Claims 1 and 12: IIDA'220 discloses a method for monitoring temperature conditions, comprising:

step for inputting a light pulse 18 (Col. 4, Lines 49-55; 65-68) into a fiber optic cable 2;

step for receiving a reflection signal (19, Raman backscattered light) that arises from said input light pulse 18 in said fiber optic cable 2 (see Col. 5, Lines 22-47);
and

step 12 (Col. 5, Lines 55-63) for determining temperature conditions (including a temperature distribution along the cable; Col. 5, Lines 22-60) on different portions of the fiber optic cable 2, based on said reflection signal, said step for determining including a step for performing a comparison (Col. 3, Lines 33-55; wherein the comparison is the calculation of a ratio of Stokes and Anti-Stokes Raman scattered

light in each measured position, or segment) for each of said different portions of the fiber optic cable as claimed by Applicant in **Claims 1 and 12**.

Regarding Claims 2 and 13, IIDA'220 discloses said step for determining comprises determining said temperature conditions based on an amplitude of said reflection signal (Col. 3, Lines 44-51).

Regarding Claims 5 and 16, IIDA'220 discloses a step for determining a location of one of said portions of the fiber optic cable based on a return time of said reflection signal (Col. 3, Lines 44-51);

Regarding Claims 8 and 19, IIDA'220 further discloses said step for determining said location by determining at least one of a location relative to an overall length of the fiber optic cable, and an absolute distance from one end of the fiber optic cable (Figs. 6-8).

Regarding Claims 11 and 22, IIDA'220 further discloses a step for correlating (Col. 5, Lines 60-64) said location of each one of the temperature conditions along said fiber optic cable (since it is a continuous distribution) with a spatial location of an area occupied by said cable; and a step for displaying on a display the spatial location of the area occupied by said cable (See also Col. 8, Lines 3-44).

Regarding Claims 9 and 20, IIDA'220 discloses a step for determining at least one of a temperature duration and a temperature progression (*i.e.*, "temperature changes rapidly"; Fig. 1, Step S5) over a predetermined time interval.

Regarding Claims 10 and 21, IIDA'220 discloses a step for generating a signal to initiate at least one of an alarm (Fig. 1, Step S5; Col. 8, Lines 45-49), a safety

measure (Col. 3, Lines 26-32) or a corrective measure (Sprinkling Control Computer 25; Fig. 10; Col. 9, Lines 31-66).

Regarding Claim 25, IIDA'220 discloses the method of detecting Raman backscattered light 19, so that each position of the fiber is detected by the reflected light pulse. Inherently, at the end, which is a break of said fiber optic cable the fiber would prevent any further out backscattered light from returning to the detector, thus the operator would detect a break of said cable by the absence of any further reflected signal than the end reflection signal, the optical receiver remaining functional since it does not depend on the particular length beyond a certain minimum amount of fiber, in order to measure the distance (to the "break" end and back) by timing the return signal.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. **Claims 23 and 24** are FINALLY rejected under 35 U.S.C. 103(a) as being unpatentable over IIDA'220 in view of **WEISS** (U. S. Patent No. 5,419,636, hereinafter **WEISS'636**) and the *Admitted Prior Art* in Applicant's disclosure, at Specification pages 1 and 2, in Paragraphs [0003-0004], hereinafter **PRIORART**.

IIDA'220 discloses or suggests all the limitations as claimed by Applicant in Claims 23 and 24, including the limitations of Claims 1-2, 5, 8-13, 16, 19-22 and 25 as

describe above in Paragraph 6. IIDA'220 further disclosed or suggested said processor configured to detect and recognize a temperature increase as described above.

IIDA'220 as described above, does not teach the system wherein the temperature increase is characteristic of a faulty escape of air from an aircraft pipe system as claimed by Applicant in Claim 23, or wherein said pipe system is a pressurized air system configured to deliver hot pressurized bleed air from an aircraft engine as claimed by Applicant in Claim 24.

IIDA'220, to summarize, is shown to teach all of the limitations as claimed by Applicant, with the exception of the temperature increase being characteristic of a faulty escape of air from a pipe system being a pressurized air system configured to deliver hot pressurized bleed air from an aircraft engine as claimed by Applicant.

From the PRIORART, it is already known to include sensors in aircraft for monitoring faulty escape of hot pressurized air from the hot bleed air system and to use a computer to detect this and generate warnings (Paragraphs [0003-0004]).

WEISS'636 further teaches or suggests that it is advantageous to use fiber optic temperature sensors as replacement for electronic equivalents in order to benefit from their inability to create potentially hazardous sparks (Col. 1, Lines 20-24).

WEISS'636 is evidence that ordinary workers in the field of temperature measurement would recognize the benefit of providing a fiber optic temperature sensor as taught by WEISS'636 and of IIDA'220 in order to detect and generate an alarm for a faulty escape of air from an aircraft hot pressurized bleed air pipe system as taught by

PRIOR ART and in order to benefit from their inability to create potentially hazardous sparks as taught by WEISS'636..

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the fiber optic temperature sensor of IIDA'220 for the known use of detection and generation of an alarm for a faulty escape of air from an aircraft hot pressurized bleed air pipe system as taught by PRIOR ART in order to avoid dangerous sparks as taught by WEISS'636.

Double Patenting

9. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

10. **Claims 23 and 24** are provisionally FINALLY rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over **Claim 6** of copending **Application No. 10/096,158** (hereinafter referred to as **PARENT**) in view of **WEISS'636** and **PRIORART**.

PARENT, to summarize, claims or suggests all the limitations as claimed by Applicant in **Claims 23 and 24**, including the intended use of the system in an aircraft including a hot engine bleed air system with a bleed air pipe; wherein a fiber optic cable sensor is arranged to extend along said bleed air pipe; and wherein said fiber optic cable sensor includes plural sensor zones along said fiber optic cable, including the steps:

subjecting the fiber optic cable to a temperature condition existing along the bleed air pipe, wherein the temperature condition exhibits an elevated temperature if bleed air leaks from the bleed air pipe, this being a faulty escape of air from a hot pressurized bleed air from the aircraft engine;

introducing an input light pulse into a first end of the fiber optic cable;

receiving a reflection signal; and

detecting and recognizing an overheating condition, which is well known to be inferred from observing a temperature increase, thus determining by the temperature increase the presence of a leak, on some portion of the fiber optic cable as claimed by Applicant in Claims 23 and 24.

PARENT does not explicitly claim the step of determining temperature increase based on said reflection signal, said determination being based on a comparison performed for each of said different portions of the fiber optic cable as claimed in the instant application.

From the **PRIORART**, it is already known to include a processor configured to detect faulty escape of hot pressurized air from the hot bleed air system by determining

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temperature conditions on different portions of temperature sensors in an aircraft and generate warnings (Paragraphs [0003-0004]).

WEISS'636 further teaches or suggests that it is advantageous to use fiber optic temperature sensors as replacement for electronic equivalents for temperature in order to benefit from their inability to create potentially hazardous sparks (Col. 1, Lines 20-24).

WEISS'636 is evidence that ordinary workers in the field of temperature measurement would recognize the benefit of providing a fiber optic temperature sensor as taught by WEISS'636 and of the PRIORART in order to detect and generate an alarm for a faulty escape of air from an aircraft hot pressurized bleed air pipe system as taught by PRIOR ART and in order to benefit from their inability to create potentially hazardous sparks as taught by WEISS'636.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the fiber optic temperature sensor of PARENT for the known use of detection and generation of an alarm for a faulty escape of air from an aircraft hot pressurized bleed air pipe system as taught by PRIOR ART in order to avoid dangerous sparks as taught by WEISS'636.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Response to Arguments

11. Applicant's arguments with respect to claims 1-36 have been considered but are moot in view of the new ground(s) of rejection.

Allowable Subject Matter

12. As allowable subject matter has been indicated, applicant's reply must either comply with all formal requirements or specifically traverse each requirement not complied with. See 37 CFR 1.111(b) and MPEP § 707.07(a).

13. Claims 3, 4, 7, 14, 15, 18 and 26-28 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

14. The following is a statement of reasons for the indication of allowable subject matter: IIDA'220 further discloses the optical fiber is laid or installed along the object to be measured (in the measurement section 3), and in the vicinity thereof, there is a constant temperature tank 17. HARTOG et al. (USPAT 5,821,861) includes an adjustable heating pad 40 (Col. 3, Lines 53-67) to facilitate testing of the system, and could be used to simulate hot spots the system is required to detect. BIBBY (USPAT 4767219) includes a reference section maintained at a known temperature, which facilitates calibration of the system.

The prior art of record fails to show or fairly suggest a method for monitoring temperature conditions including a step for determining temperature conditions on different portions of the fiber optic cable based on said reflection signal, wherein said step for determining comprises performing a comparison for each of said different portions of the fiber optic cable; and

wherein said comparison is performed with respect to a threshold value corresponding to one of said portions as claimed by Applicant in Claim 3 and 14; or

wherein said comparison is performed with respect to a comparison signal corresponding to one of said portions as claimed by Applicant in Claim 26 and 14, each

functioning as claimed by applicant in the claims, in combination with the remaining limitations of the respective claims.

Conclusion

15. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art cited in a form PTO-892 and not mentioned above disclose related fiber optic temperature distribution sensing devices and methods.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stanley J. Pruchnic, Jr., whose telephone number is **(571) 272-2248**. The examiner can normally be reached on weekdays (Monday through Friday) from 7:30 AM to 4:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego F. F. Gutierrez can be reached at **(571) 272-2245**.

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The **Official FAX** number for Technology Center 2800 is (703) 872-9306 for **all official communications**.

Any inquiry of a general nature or relating to the status of this application or proceeding may be directed to the official USPTO website at <http://www.uspto.gov/> or you may call the **USPTO Call Center** at 800-786-9199 or 703-308-4357. The Technology Center 2800 Customer Service FAX phone number is (703) 872-9317.

The cited U.S. patents and patent application publications are available for download via the Office's PAIR. As an alternate source, all U.S. patents and patent application publications are available on the USPTO web site (www.uspto.gov), from the Office of Public Records and from commercial sources.

Private PAIR provides external customers Internet-based access to patent application status and history information as well as the ability to view the scanned images of each customer's own application file folder(s).

For inquiries relating to Patent e-business products and service applications, you may call the **Patent Electronic Business Center (EBC)** at 703-305-3028 or toll free at 866-217-9197 between the hours of 6 a.m. and midnight Monday through Friday EST, or by e-mail at: ebc@uspto.gov. Additional information is available on the Patent EBC Web site at: <http://www.uspto.gov/ebc/index.html>.

G. Verbitsky

**GAIL VERBITSKY
PRIMARY EXAMINER**

**DIEGO F. F. GUTIERREZ
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800**

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Stanley J. Pruchnic, Jr.
12/29/04